

NOTES ON THE FIBRES OF CERTAIN AUSTRALIAN
HIRCINIDÆ.

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Among the numerous Sponges of the Australian shores which I am examining at present, there is a series of forms which possess the filaments characterising the Hircinidæ. These filaments are of the same shape as those of *Hircina* (F. E. Schulze. *Zeitschrift für Wissenschaftliche Zoologie*. Band XXXIII, pl. IV.), but they do not appear so smooth. With high powers (Zeiss $\frac{1}{2}$) it is possible to detect minute spots on their surface and similar spots also occur on the fibres of the horny skeletons. I am rather inclined to consider the latter as the expression of the Spongoblasts, and I do not think it altogether impossible that Spongoblasts *also form* the filaments and cause in some cases their spotted appearance.

In a few species I have observed filaments apparently growing out from ordinary fibres. It is highly probable, that the filaments get into contact with the fibre and are then fixed there by succeeding layers of Spongiolin. It is however, possible that this occurrence is not so accessory, in which case we would have to suppose that the filaments were parts of the horny fibrous skeleton of the sponge.

Another suggestion has however occurred to me in consequence of the observations of some Oscillarians in Ceraosponges. These Oscillarians are of equal length with the filaments and of similar shape, only much thicker; and it appears not improbable that these may cause the formation of the filaments in the following manner:—The Oscillarians infest the Sponges and have on the Sponge-tissue the same physiological effect as a grain of sand or

other foreign body would have. In Sponges as in higher animals foreign bodies are always encrusted by the substance the skeleton is made of. Particles of sand which enter the Sponge are covered by a thin layer of horny substance.

They are consequently soon covered by a thin layer of horny substance, which may suffice to kill them. Their substance is absorbed by the Sponge, and the vacant space filled with horn-substance. In this way a structure could be arrived at, which is similar to an *Oscillaria* as far as the shape, and similar to the horn-fibres as far as the chemical structure, is concerned.

A series of these *Hirginidæ* possesses a horn fibre skeleton, which is very different from the skeleton of the known *Hirginidæ*, but differs also from any known form of horny fibre.

Numerous minute horny fibres running in various directions and continually anastomosing form a column of reticulate horny-substance which corresponds to an ordinary main fibre. It is hardly thicker than the homologous fibres in other *Ceraosponges*. A great number of *Hirginidæ* possess this character.

Fleming described (*Würzburger physikalisch-med. Verhandl.* II., Seite 1) extraordinary cells in the fibres of *Janthella*. I have had occasion to study similar highly pigmented cells in some hornsponges which possess filaments. These pigment cells are large and distributed in pretty regular cylindrical layers between the layers of horny substance in the fibres. These cells cause the deep black colour of the fibres, but certainly have nothing whatever to do with the *growth* of the horny fibres as Carter assumes. (On the development of the fibre of the *Spongida* *Ann., Mag.* (5) VII., p. 112).

These cells might possibly also turn out to be small algæ, which like the yellow cells in other animals live symbiotic with the Sponge.

Their constant occurrence in certain species cannot influence the hypothesis, as the yellow cells in higher *Coelenterata* are also always found in the same species.